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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Franck Thudor

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Joseph J. Laks

Thomson Licensing LLC

2 Independence Way, Patent Operations

PO Box 5312

PRINCETON, NJ 08543

EXAMINER

DUONG, DIEU HIEN

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,929	Applicant(s) THUDOR ET AL.	
	Examiner DIEU HIEN T. DUONG	Art Unit 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is a response to applicant's amendment filed on 03/11/2008. In virtue of this amendment, claims 1-9 are currently in the instant application.

Drawings

1. The drawing filed on 03/11/2008 is acknowledged.

Specification

2. The specification filed on 03/11/2008 is acknowledged.

Claim Objections

3. Claims 1-3 are objected to because of the following informalities:

Claim 1, line 6, " λ_s the guided waveguide" should be changed to - " λ_s is the guided waveguide- -;

Claim 2, line 4, "k' a positive" should be changed to - "k' is a positive- -;

Claim 3, line 5, "k'" a positive should be changed to - "k" is a positive- -;

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 2:

Lines 1-2, the recitation “where each feed-line terminates in an open circuit” is unclear since “an open circuit” is already recited in line 7 of claim 1. If they are the same it should be “the open circuit”.

Line 4, the recitation “where λ_m is the guided wavelength under the line” is unclear. It is not clear what it means by “the guided wavelength under the line”. Also, it is not clear what “the line” refers to. “The line” refers to the “each feed-line” or the “line/slot transition”. For examination purpose, it is interpreted as “where λ_m is the guided wavelength”.

Regarding claim 3:

Lines 1-3, the recitation “where each feed-line is coupled to the slot according to a line/slot transition with a microstrip lines terminated by a short-circuit” is unclear since “a short-circuit” is already recited in line 10 of claimed 1. If they are the same, it should be “the short-circuit”.

Line 4, the recitation “where λ_m is the guided wavelength under the line” is unclear. It is not clear what it means by “the guided wavelength under the line”. Also, it is not clear what “the line” refers to. “The line” refers to the “each feed-line” or the “line/slot transition”. For examination purpose, it is interpreted as “where λ_m is the guided wavelength”.

Clarifications are required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto et al. (US 5,892,487 of record), hereinafter "Fujimoto".

Regarding claim 1, Fujimoto discloses, in Figures 3-6, a planar antenna with diversity of radiation realised on a substrate (13) comprising

a slot (16) of closed shape dimensioned to operate on a mode higher than a fundamental mode and

at least one feed-line (17, 18) coupled to said slot according to a line/slot transition, said antenna comprising a first feed-line (17) coupled in zone of the slot forming an open circuit and said second feed line being coupled in a zone of the slot forming a short-circuit; the second feed-line (18) placed at a distance $d = (2n+1) (\lambda_s / 4)$ from said first line, where n is an integer greater than or equal to zero.

Fujimoto does not disclose, the perimeter of the slot being selected such that $p = \kappa \lambda_s$ where p is the perimeter of the slot, κ is an integer greater than 1 and λ_s is the guided wavelength in the slot.

However, such difference is not patentable merits since it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the length of the perimeter of the slot to obtain a desired frequency and such modification would have involved a mere change in the length of the perimeter of the slot of the antenna. A mere change in perimeter of the slot is generally recognized as being within level skill in the art.

Note: with $\kappa = 3$, $p = 3\lambda_s$ and $n=1$, $d = 3\lambda_s/4$. The distance $d = (3\lambda_s/4)$ is the distance of the second feed-line (18) placed from the first feed-line (17) as taught by Fujimoto.

Regarding claim 2, as applied to claim 1, Fujimoto discloses, in Figure 6, wherein each **feed-line** terminates in an open circuit and is coupled to the slot according to a **line/slot transition**.

Fujimoto does not disclose the length of each feed line after the line/slot transition being equals to $(2k'+1)\lambda_m/4$ where λ_m is the guided wavelength under **the line** and k' is a positive or null integer.

However, Fujimoto discloses, in col. 2, lines 48-50, the dimensions and the shapes of feed lines (17a, 18a) are optimized to achieve with a wide frequency bandwidth and a good isolation between the orthogonal and polarizations. Therefore, to employ having the length of each feed line after the line/slot transition being equals to $(2k'+1)\lambda_m/4$ would have been deemed obvious to person skill in the art of antenna.

Claim 3 is rejected for similar subject matter to claim 2.

Regarding claim 4, as applied to claim 1, Fujimoto discloses, in Figure 3, each feed-line being coupled magnetically to the slot according to a tangential line/slot transition.

Regarding claim 5, as applied to claim 1, Fujimoto discloses, in Figure 6, where the feed-lines (17, 18) are realised in microstrip technology, coplanar or by a coaxial cable.

Regarding claim 6, as applied to claim 1, Fujimoto discloses, in Figures 6 and 8, where the shape of the slot (16) is an annular square, rectangular, polygonal shape or in a clover leaf form.

Regarding claim 7, as applied to claim 6, Fujimoto discloses, in Figure 8, wherein the slot (16) is of rectangular shape and the feed-lines are equidistant from an axis of symmetry of the slot.

Regarding claim 8, as applied to claim 6, Fujimoto discloses, in Figure 8, wherein the slot (16) is of rectangular shape and one of the feed-lines is positioned according to an axis of symmetry of the slot.

Regarding claim 9, as applied to claim 1, Fujimoto discloses, in Figure 1, wherein the fed lines (17, 18) are connected to a transmission/reception means (9) enabling a diversity of reception.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1, 4 and 6-8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9 and 11 of U.S. Patent No. 7,027,001 B2 of record. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the claims 1, 9 and 11 of the above patent including all limitation of the claims 1-4, and 6-8 of the instant application.

Response to Arguments

10. Applicant's arguments filed 03/11/2008 have been fully considered but they are not persuasive.

a) Argument regarding to rejection under 35 U.S.C. 112, second paragraph:

The 112 second paragraph rejection of claim 2 is partially repeated in this office action since applicant fails to response completely.

b) Argument regarding to rejection under Fujimoto:

Regarding claim 1, applicant argues that Fujimoto fails to disclose or suggest a system wherein "a first feed-line coupled in zone of the slot forming an open circuit and a second feed-line placed at a distance $d = (2n+1) (\lambda_s / 4)$ from said first line, where n is an integer greater than or equal to zero, said second feed line being coupled in a zone of the slot forming a short-circuit" as described in amended claim 1.

Examiner respectfully disagrees.

Fujimoto discloses, in Figures 3-6, a first feed-line coupled in zone of the slot forming an open circuit and a second feed-line placed at a distance $d = (2n+1) (\lambda_s / 4)$

from said first line, where n is an integer greater than or equal to zero, said second feed line being coupled in a zone of the slot forming a short-circuit" as described in amended claim 1. With $\kappa = 3$, then $p = 3\lambda_s$, and $n=1$, then $d = 3\lambda_s/4$. This distance $d = 3\lambda_s/4$ is the distance between the second feed line (18) with the first feed line (17) as taught by Fujimoto. Therefore, Fujimoto teach the limitation "a first feed-line coupled in zone of the slot forming an open circuit and a second feed-line placed at a distance $d = (2n+1)(\lambda_s/4)$ from said first line, where n is an integer greater than or equal to zero, said second feed line being coupled in a zone of the slot forming a short-circuit" as described in amended claim 1 of applicant.

c) Argument regarding to rejection under double patenting:

The double patenting rejection is repeated in this office action since applicant fails to file a terminal disclaimer under 37 CFR 1.32 to overcome the rejection.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiry

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIEU HIEN T. DUONG whose telephone number is (571)272-8980. The examiner can normally be reached on Monday - Friday, from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on 571-272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Trinh Vo Dinh/
Primary Examiner, Art Unit 2821